



County of Alameda Local Hazard Mitigation Plan ANNEX

Introduction

Alameda County, with 14 cities and its unincorporated areas, is comprised of 813 square miles and a population of 1,498,000 (Census 2000). Located on the east side of San Francisco Bay, the County has experienced its share of disasters, including the Loma Prieta Earthquake of 1989 and the Oakland Hills Fire Storm of 1991. The County, with 8,700 employees and an annual operating budget of \$1.96 billion, currently owns and occupies approximately 6.3 million square feet of office and institutional space, leases another 1.3 million, and also owns, operates, and maintains bridges, dams, and other infrastructure.

The County has a Safety Element in its General Plan that includes a discussion of fire, earthquake, flooding, and landslide hazards. In addition, the County enforces the requirements of the California Environmental Quality Act (CEQA), which, since 1988, requires mitigation for identified natural hazards. The County has used these pre-existing programs as a basis for identifying gaps that may lead to disaster vulnerabilities in order to work on ways to address these risks through mitigation.

The Planning Process

Many of the activities conducted by the County were introduced into the planning process for the multi-jurisdictional plan. The County participated in various ABAG workshops, conferences, and meetings, including:

- Forum for Bay Area Cities, Counties, and Special Districts
- Lifeline and Transportation Hazard Review Committee
- ABAG General Assembly – Taming Natural Disasters Conference
- ABAG Mitigation Planning Forum
- Earthquake Mitigation of Soft-Stories for Multi-Family Residential Structures Charrette
- Earthquake Hazards Outreach Review Committee

In addition, the County has provided written and oral comments on the multi-jurisdictional plan and provided information on facilities that are defined as “critical” to ABAG.

Representatives from multiple County departments met on a regular basis to identify and prioritize appropriate mitigation strategies. Personnel involved in these meetings included senior management and staff from General Services, Community Development, Public Works, Health Care Services, Office of Emergency Services, Sheriff’s Office, and Fire Department. The group was made up of architects, planners, building department officials, facility managers, civil engineers, public health specialists, emergency managers, and fire officials. At the first meeting, general priorities and appropriate County departments were identified. Subsequent meetings identified preliminary budgets and potential funding sources for strategies designated as “High” priority for County owned and operated facilities, as follows:

1. Seismically retrofit three (3) existing fire stations.
2. Construct four (4) new fire stations to replace existing facilities deemed unable to be seismically retrofitted.
3. Develop pre-disaster plans such as Continuity of Government and Post-Event Recovery (integrate with response planning).
4. Retrofit or replace critical facilities and lifelines and/or their backup facilities that are shown to be vulnerable to damage in natural disasters.
5. Conduct a watershed analysis of runoff and drainage systems to predict areas of insufficient capacity in the storm drain and natural creek system.



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6. Continue to repair and make structural improvements to storm drains, pipelines, and/or channels to enable them to perform to their design capacity in handling water flows as part of regular maintenance activities.
7. Conduct an inventory of existing or suspected soft-story residential, commercial and industrial structures.
8. Inventory non-ductile concrete, tilt-up concrete, and other privately-owned structurally suspicious buildings.
9. To reduce flood risk, and thereby reduce the cost of flood insurance to property owners, work to qualify for the highest-feasible rating under the Community Rating System of the National Flood Insurance Program.
10. Increase efforts to reduce landslides and erosion in existing and future development through continuing education of design professionals on mitigation strategies.
11. Incorporate FEMA guidelines and suggested activities into local government plans and procedures for managing flood hazards.
12. Establish and enforce regulations concerning new construction (and major improvements to existing structures) within flood zones in order to be in compliance with federal requirements and, thus, be a participant in the Community Rating System of the National Flood Insurance Program.
13. Sponsor the formation and training of Community Emergency Response Teams (CERT) through partnerships with local businesses.
14. Assist businesses in the development of defensible space through the use of, for example, "tool libraries" for weed abatement tools, roadside collection and/or chipping services (for brush, weeds, and tree branches) in wildland-urban-interface fire-threatened communities or in areas exposed to high-to-extreme fire threat.
15. Develop printed materials, utilize existing materials (such as developed by FEMA and the American Red Cross), conduct workshops, and/or provide outreach encouraging employees of these critical health care facilities to have family disaster plans and conduct mitigation activities in their own homes.

Opportunity for public comments on the DRAFT mitigation strategies was provided at the County Board of Supervisors meeting on January 23 2007. The resolution adopting the plan and strategies was on the County Board of Supervisors agenda for January 23 2007. The mitigation strategies will become an implementation appendix of the Safety Element of the County's General Plan.

Assessment of Hazards and Risks

The County's hazards and risks are generally consistent with those identified in the ABAG multi-jurisdictional Local Hazard Mitigation Plan, to which this is an Annex. Maps of these hazards and risks are shown on the ABAG website at <http://quake.abag.ca.gov/mitigation/>.

The County has experienced a number of different disasters over the last 50 years, including numerous floods, draughts, wildfires, energy shortages, and severe storms. Among the worst disasters in recent history are the Loma Prieta Earthquake of 1989 and the Oakland Hills Firestorm of 1991. This hazard information was included at the County Board of Supervisors meeting held on January 23 2007. More information on disasters declared in Alameda County can be found on the ABAG website at <http://quake.abag.ca.gov/mitigation/disaster-history.html>.

The ABAG multi-jurisdictional Local Hazard Mitigation Plan, to which this is an Annex, lists nine hazards that impact the Bay Area, five related to earthquakes (faulting, shaking, earthquake-induced landslides, liquefaction, and tsunamis) and four related to weather (flooding, landslides, wildfires, and drought). These hazards also impact this community.



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While the County has undertaken a number of general hazard mapping activities since the first Safety Element was prepared by the County, all of these maps are less detailed and are not as current as those shown on the ABAG website at <http://quake.abag.ca.gov/mitigation/>.

The County has had a number of landslides in the hills on the east side of the County, including one that damaged 12 homes in 1980.

Information on disasters declared in Alameda County is at <http://quake.abag.ca.gov/mitigation/disaster-history.html>.

The County examined the hazard exposure of County urban land based on the information on ABAG's website at <http://quake.abag.ca.gov/mitigation/pickdbh2.html>. Of the 33,366 urban acres in the County,

- ◆ Earthquake faulting – 1,594 acres are within CGS Study Zone
- ◆ Earthquake shaking – 17,593 acres are in the highest two categories of shaking potential, in large part because the Hayward, Greenville, and Calaveras fault systems run through the County.
- ◆ Earthquake-induced landslides – the California Geological Survey has not completed mapping of this hazard in the County of Alameda. However, because few areas have been mapped as landslides, this hazard is viewed as similar to that posed by weather-related hazards. 2,766 acres are within CGS Study Zone.
- ◆ Earthquake liquefaction – 9,095 acres are in areas of moderate, high, or very high liquefaction susceptibility.
- ◆ Tsunamis – While tsunamis may be a hazard in the Bay Area, the extent of the hazard within San Francisco Bay has not been determined. When information becomes available, this hazard will be integrated into this plan. Based on current research, as explained in Appendix C of the multi-jurisdictional Local Hazard Mitigation Plan, it is possible that the wave run-up height directly across from the Golden Gate (in Alameda City, Oakland, and Berkeley) might be particularly vulnerable. As stated in that plan, "No maps have been published as part of this OES effort for the area within San Francisco Bay, although an ongoing study indicates that if the run-up height is 10 meters at the Golden Gate, it might be half as high when it reaches the East Bay, and only 10% as high (1 meter) by the time it reaches the northern and southern ends of the Bay. ABAG continues to work with OES and the affected counties and hopes to make additional maps of this type available in the coming months."
- ◆ Flooding – 1,010 acres are in the 100-year flood plain, while an additional 900 acres are in other flood-prone areas.
- ◆ Landslides – 3,999 acres are in areas of existing landslides.
- ◆ Wildfires – 15,686 acres are subject to high, very high, or extreme wildfire threat (because of the urban nature of the County), but 10,178 acres are in wildland-urban interface threat areas.
- ◆ Dam Inundation – 4,334 acres are subject to dam inundation.
- ◆ Drought – The entire Alameda County area (274,167 acres) is subject to drought.

The County also examined the hazard exposure of infrastructure based on the information on ABAG's website at <http://quake.abag.ca.gov/mitigation/pickdbh2.html>. Of the 1,524 miles of roadway in the County,

- ◆ Earthquake faulting – 63 miles are within CGS Study Zone.
- ◆ Earthquake shaking – 673 miles are in the highest two categories of shaking potential.
- ◆ Earthquake-induced landslides – the California Geological Survey has not completed mapping of this hazard in the County of Alameda. 52 miles are within CGS Study Zone.
- ◆ Earthquake liquefaction – 302 miles are in areas of moderate, high, or very high liquefaction susceptibility.



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- ◆ Tsunamis –While tsunamis may be a hazard in the Bay Area, the extent of the hazard within San Francisco Bay has not been determined. When information becomes available, this hazard will be integrated into this plan.
- ◆ Flooding – 29 miles are in the 100-year flood plain, while an additional 26 miles are in other flood-prone areas.
- ◆ Landslides – 431 miles are in areas of existing landslides.
- ◆ Wildfires – 1,083 miles are subject to high, very high, or extreme wildfire threat, 262 miles of roads are in wildland-urban interface threat areas.
- ◆ Dam Inundation –120 miles are in areas subject to dam inundation.
- ◆ Drought – is not a hazard for roadways.

Finally, the County examined the hazard exposure of critical health care facilities, schools, and County-owned buildings based on the information on ABAG's website at <http://quake.abag.ca.gov/mitigation/pickcrit.html>. Of the critical facilities in the County,

- ◆ Earthquake faulting – Of the 53 bridges and interchanges locally-owned, 2 are within CGS Study Zone.
- ◆ Earthquake shaking – All 3 Hospitals, 31 out of 36 schools, 10 out of 15 critical facilities (6 out of 8 County-owned, and 4 out of 7 owned by Special Districts), 29 out of 53 bridges and interchanges locally-owned are in the highest two categories of shaking potential.
- ◆ Earthquake-induced landslides –the California Geological Survey has not completed mapping of this hazard in the County of Alameda. 2 out of 8 critical facilities owned by the County, 31 out of 53 bridges and interchanges locally-owned are within CGS Study Zone.
- ◆ Earthquake liquefaction – 16 out of 36 schools, 3 out of 15 critical facilities (2 of County-owned, and 1 of Special District), 25 out of 53 bridges and interchanges locally-owned are in areas of moderate, high, or very high liquefaction susceptibility areas.
- ◆ Tsunamis – While tsunamis may be a hazard in the Bay Area, the extent of the hazard within San Francisco Bay has not been determined. When information becomes available, this hazard will be integrated into this plan.
- ◆ Flooding – 2 Hospitals, 1 school, 1 critical facility owned by Special District, and 3 out of 53 bridges and interchanges locally-owned are in either the 100-year flood plain or in other flood-prone areas.
- ◆ Landslides – 3 out of 15 critical facilities (2 out of 8 County-owned, and 1 out of 7 owned by Special Districts), 4 out of 53 bridges and interchanges locally-owned are in areas of existing landslides.
- ◆ Wildfires – 3 out of 36 schools, 4 out of 15 critical facilities (3 out of 7 County-owned, and 1 owned by a Special District), 25 out of 53 bridges and interchanges locally-owned are subject to high, very high, or extreme wildfire threat, 16 out of 36 schools, 5 critical facilities (2 out of 8 County-owned, and 3 out of 7 owned by Special Districts), 10 out of 53 bridges and interchanges locally-owned are in wildland-urban interface threat areas.
- ◆ Dam Inundation – 4 out of 36 schools, 1 out of 7 critical facilities owned by Special District, 8 out of 53 bridges and interchanges locally-owned are in an area subject to dam inundation.
- ◆ Drought – Drought will not affect County buildings directly.

In spite of the areas of the County located in flood-prone areas, there are no repetitive loss properties in the County based on the information at <http://quake.abag.ca.gov/mitigation/pickflood.html>.

The County plans to continue to work with ABAG to improve the risk assessment information being compiled by ABAG, including developing ways to assess how many soft-story apartments are located in the County.



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Drought, though a potential problem in the County, is not fully assessed. The County will work with ABAG and various water supply agencies on this issue.

The County plans to work with ABAG to develop specific information about the kind and level of damage to buildings, infrastructure, and critical facilities which might result from any of the hazards previously noted.

As these impacts are not fully developed, the County has reviewed the hazards identified and ranked the hazards based on past disasters and expected future impacts. The conclusion is that earthquakes (particularly shaking), flooding (including dam failure), wildfire, and landslides (including unstable earth) pose a significant risk for potential loss.

Mitigation Activities and Priorities

As a participant in the ABAG multi-jurisdictional planning process, County of Alameda staff helped in the development and review of the comprehensive list of mitigation strategies in the overall multi-jurisdictional plan. The decision on priority was made based on a variety of criteria, not simply on an economic cost-benefit analysis. These criteria include being technically and administratively feasible, politically acceptable, socially appropriate, legal, economically sound, and not harmful to the environment or our heritage.

Over time, the County is committed to developing better hazard and risk information to use when prioritizing mitigation strategies, recognizing that while it is impossible to be disaster-proof region, we can be a disaster-resistant one. In addition, many of the strategies are existing County programs, among them being:

- A. Vulnerability assessments of County facilities and infrastructure;
- B. Non-structural mitigation for building contents;
- C. Installation of micro and/or surveillance cameras at critical public assets tied to web-based software;
- D. Coordination with the State Division of Safety of Dams to ensure that cities and counties are aware of the timeline for the maintenance and inspection of dams whose failure would impact their jurisdiction;
- E. Development of interoperable communications for first responders from cities, counties, special districts, state, and federal agencies.
- F. Maintain and update Alameda County's Standardized Emergency Management System Plan.
- G. Participation in general mutual-aid agreements and agreements with adjoining jurisdictions for cooperative response to fires, floods, earthquakes, and other disasters.
- H. Participation in FEMA's National Flood Insurance Program.

These draft priorities were submitted to County Agency Directors and the County Administrator's Office for review. The draft priorities were then provided to the County Board of Supervisors on January 23 2007 and the public was provided with an opportunity to comment on the DRAFT priorities at said Board of Supervisors Meeting. The final strategies (as shown in the attached Table) will become an *Implementation Appendix* to the City's *Safety Element*.

In addition, the County examined the hazard exposure information to County-owned critical facilities supplied by ABAG. The County has determined that the combination of construction type, age, and shaking exposure to eight Alameda County Fire Stations is significant, such that 4 will need to be replaced and 3 will need to be retrofitted. Therefore, the County plans to apply for a Pre-Disaster Mitigation grant to retrofit these structures.



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The Plan Update Process

As required by the Disaster Mitigation Act of 2000, the County of Alameda will update this plan annex at least once every five years, by participating in a multi-agency effort with ABAG and other agencies to develop a multi-jurisdictional plan.

The County General Services Agency will ensure that monitoring of this Annex will occur. The plan will be monitored on an on-going basis. However, the major disasters affecting our County, legal changes, notices from ABAG as the lead agency in this process, and other triggers will be used. Finally, the Annex will be a discussion item on the agenda of the meeting of Department leaders at least once a year in April. At that meeting, the department heads will focus on evaluating the Annex in light of technological and political changes during the past year or other significant events. The Department leaders will be responsible for determining if the plan should be updated.

The County is committed to reviewing and updating this plan annex at least once every five years, as required by the Disaster Mitigation Act of 2000. The County General Services Agency Director will contact ABAG four years after this plan is approved to ensure that ABAG plans to undertake the plan update process. If so, the County again plans to participate in the multi-jurisdictional plan. If ABAG is unwilling or unable to act as the lead agency in the multi-jurisdictional effort, other agencies will be contacted, including the County's Office of Emergency Services. Counties should then work together to identify another regional forum for developing a multi-jurisdictional plan.

The public will continue to be involved whenever the plan is updated and as appropriate during the monitoring and evaluation process. Prior to adoption of updates, the County will provide the opportunity for the public to comment on the updates. A public notice will be posted prior to the meeting to announce the comment period and meeting logistics.